AUGER-ANCHORED BEACH UMBRELLA

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BACKGROUND OF THE INVENTION

Beach umbrellas are used to create an area shaded from the sunlight beneath the umbrella canopy. They are particularly useful for bathers at a beach or swimming pool, where there is generally a lack of trees or roofed structures to provide shade. Because a bather's skin is largely exposed, there is a greater need to provide protection from harmful ultraviolet rays, which may cause sunburn or melanomas. The shade and shelter provided by a beach umbrella is also useful in protecting a bather's valuables and shielding perishable items from direct sunlight.

The principal problem with beach umbrellas has been finding a means of securely anchoring them in the ground. Lack of secure anchoring places a limit on the size of the umbrella canopy that can practically be utilized, since larger canopies are heavier and more vulnerable to gusts of wind. Lack of secure anchoring also makes it impractical to utilize mechanisms for tilting the umbrella canopy in the direction of the sun so as to maximize the shaded area.

Previous attempts to address this problem have utilized anchoring devices which must be manually inserted or buried in the ground. Such devices are disclosed by Beiter, U.S. Patent No. 2,209,504, Pesaturo, U.S. Patent No. 2,759,486, Webb, U.S. Patent No. 4,756,129, Alexander, U.S. Patent No. 4,803,812, Padin, U.S. Patent No. 4,850,564, Robinson, U.S. Patent No. 5,199,361, Buttimore, U.S. Patent No. 5,636,944, Doreste, U.S. Patent No. 6,328,046 B2, Hollenbeck, U.S. Patent No. 6,354,554 B1, and Girard, U.S. Patent No. 6,412,748 B1. However, each of these references suffers from the

disadvantage of depending on the physical strength of the person inserting or burying the umbrella pole in the ground. Frail individuals and children may lack the requisite physical strength to effectively utilize these anchoring devices. Even a robust individual may have difficulty when the ground is hard. Moreover, manual insertion or burial is laborious and time-consuming, and it often does not achieve the depth of ground penetration needed to securely anchor the umbrella.

For the foregoing reasons, there is a need for a beach umbrella having a motor-driven anchoring device, which will enable any user to securely anchor the umbrella in a variety of terrains.

SUMMARY OF THE INVENTION

The present invention is directed to a device that satisfies the need for a beach umbrella having a motor-driven anchoring device. The spreadable canopy is typical in design for umbrella canopies as they are presently known in the art. Due to the improved anchoring afforded by the present invention, however, a canopy larger than those typically found on beach umbrellas may be utilized. The improved anchoring of the present invention also enables the use of a jointed canopy member by which the canopy may be tilted in the direction of the sun so as to maximize the area of shade cast by the canopy.

A self-anchoring beach umbrella having features of the present invention comprises two principal parts. First, it has a canopy member, which consists of an upper tubular element and a lower tubular element. A spreadable canopy is attached to the upper tubular element. Within the lower tubular element of the canopy member is formed an axial lumen.

The second part of the present invention is a pole member having an upper element formed for insertion into the axial lumen of the canopy member. Within or mounted upon the pole member is a battery chamber containing one or more batteries. The battery chamber has a means for accessing the batteries when they need to be replaced or recharged. The pole member also has a motor element comprising a reversible electric motor, which has a shaft through which a rotary torque is generated when the motor is activated. The shaft is axially disposed on the lower end of the motor. An auger is coupled to the shaft so that it rotates when the motor is activated.

Since the motor is reversible, it may be activated in the forward or reverse direction. The forward direction of the motor is considered to be clockwise for a right-hand-screw type auger (i.e., one in which the helical flighting wraps around the auger's axis in the clockwise direction), and counterclockwise for a left-hand-screw type auger (i.e., one in which the helical flighting wraps around the auger's axis in the counter-clockwise direction). Conversely, the reverse direction of the motor is considered to be counter-clockwise for a right-hand-screw type auger and clockwise for a left-hand-screw type auger. When the motor is activated in the forward direction, the effect of the auger rotating in the ground will be to lift the soil or sand, thereby excavating a hole into which the umbrella's pole member may be inserted. When the motor is activated in the reverse direction, the effect of the auger rotating in the ground will be to push the excavated soil or sand back down into the hole, thereby causing the pole member to extract itself from the ground.

The speed and direction of the reversible electric motor is controlled by a switch mounted on the motor element of the pole member. The switch is electrically connected

to the batteries and the motor. Optimally, the switch is located on a handle attached to the motor element of the pole member. The handle enables the user to guide the auger and apply a supplemental force in the direction of the auger's motion. Optionally, a positive action type switch may be utilized, such that the direction of the pressure on the switch controls the direction of the motor, and the amount of pressure on the switch regulates the speed of the motor. Such positive action switches are typically used on hand-held electric power tools.

In an alternate embodiment, the auger is detachable from the motor shaft so that it may be replaced if damaged. This feature also enables the use of one or more alternate augers designed for different ground conditions.

Due to its improved anchoring, the present invention may optimally utilize a tilting canopy by means of a joint between the upper and lower tubular elements of the canopy member. Using the joint, the canopy is tilted in the direction of the sun to maximize the area of shade cast by the canopy.

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 is a front view of a self-anchoring beach umbrella embodying features of the present invention.

DESCRIPTION OF THE INVENTION

As shown in Fig. 1, a self-anchoring umbrella embodying the features of the present invention **10** comprises a canopy member **11** and a pole member **12**. The canopy member **11** is comprised of an upper tubular element **13** and a lower tubular element **14**.

The pole member **12** is comprised of an upper element **15**, a motor element **16**, and an auger **17**.

A spreadable canopy **18** is connected to and supported by the upper tubular element **13** of the canopy member **11**. Within the lower tubular element **14** of the canopy member **11** is formed an axial lumen **19**. The upper element **15** of the pole member **12** is formed to slide snugly into the axial lumen **19** of lower tubular element **14** of the canopy member **11**.

The motor element **16** of the pole member **12** comprises a reversible electric motor (not shown), having on its lower end an axially-disposed shaft **20**, which is coupled to the auger **17**. Mounted upon the motor element **16** of the pole member **12** is a switch **21**. In the preferred embodiment, the switch **21** is mounted on a handle **22** attached to the motor element **16** of the pole member **12**. The switch **21** is electrically connected to the reversible electric motor (not shown) and to one or more batteries (not shown) enclosed in a battery chamber **23**, which is within or mounted upon the pole member **17**. Access to the batteries is provided by a means **24** for accessing the battery chamber **23**, which access means may be a cap, panel or similar structure which screws or slides into the exposed side of the battery chamber **23**.

In the preferred embodiment, the switch **21** is a positive action switch which is positioned on the handle **22** in such a way that the operator may regulate the direction and speed of the reversible electric motor (not shown) while using the handle **22** to guide the pole member **12** into the ground. In the neutral position (i.e., no pressure applied) the switch **21** turns the reversible electric motor (not shown) off. When downward pressure is applied to the switch **21**, the motor (not shown) is activated in the forward direction,

causing the auger **17** to rotate in the direction in which its helical flighting **25** wraps around the axis of the auger. When upward pressure is applied to the switch **21**, the motor (not shown) is activated in the reverse direction, causing the auger **17** to rotate in the direction opposite to that in which its helical flighting **25** wraps around the axis of the auger. The amount of pressure applied to the switch **21** in the downward or upward direction regulates the speed of the reversible electric motor (not shown) in the forward or reverse direction.

In an alternate embodiment, the auger **17** is detachably coupled to the shaft **20** of the reversible electric motor **16**, to facilitate replacement of a damaged auger and to enable use of multiple auger configurations designed for different terrains. In another alternate embodiment, a tiltable joint means is provided between the upper tubular element **13** and the lower tubular element **14** of the canopy member **11**, thereby enabling the canopy **18** to be tilted about the axis of the umbrella.

The design of the canopy **18** and the means of its attachment to the upper tubular element **13** of the canopy member **11** is typical for beach umbrella canopies as they are presently known in the art. The canopy member **11** may be fabricated of a light-weight, durable tubular metal or plastic material of the types presently known in the art. In the preferred embodiment, the canopy member **11** has a circular cross-section not exceeding six inches in diameter. The upper element **15** of the pole member **12** has a cross-section which fits snugly into the axial lumen **19** of the lower tubular element **14** of the canopy member **11** and may be fabricated of a light-weight, durable metal or plastic material of the types presently known in the art. In the preferred embodiment, the upper element **15** of the pole member 12 has a circular cross-section not exceeding six inches in diameter.

The motor element **16** of the pole member **12** comprises a reversible electric motor (not shown) encased in tubular sleeve which may be fabricated of a light-weight, durable metal or plastic material of the types presently known in the art. The reversible electric motor (now shown) is the type typically used in small power tools, such as hand-held drills. The motor (not shown) is electrically connected to the batteries in the battery cavity **23** through the switch **21**. In the preferred embodiment, the switch **21** is located on the handle **22** which is mounted on the motor element **16** of the pole member **12**. The switch and the handle may be fabricated of a light-weight, durable metal or plastic material of the types presently known in the art.

The auger **17** has a cylindrical axis about which is wrapped helical flighting **25**. The diameter of the auger **17** and the width and pitch of the helical flighting **25** are determined by the type of terrain in which the beach umbrella **10** will be used. The top end of the auger **17** is designed to be coupled to the shaft **20** of the reversible electric motor (not shown). In the preferred embodiment, the auger **17** is fabricated of a steel alloy suitable for prolonged exposure to a salt-water environment, and the bottom end of the auger **17** is conical in shape to facilitate insertion into the ground.

The operator of the invention **10** finds a desired location and takes hold of the pole member **12** by the handle **22**, pointing the bottom end of the auger **17** into the ground. The operator then activates the switch **21** in the forward direction, causing the auger to bore into the ground. In the preferred embodiment, the operator controls the speed of the auger **17** by the amount of pressure applied to the switch **21**. Using the handle **22**, the operator applies a downward pressure and guides the pole member **12** as the auger **17** bores down into the ground to a sufficient depth to secure the pole member

12. The operator then lifts the canopy member **11** and inserts it over the upper element **15** of the pole member **17** in such a way as the upper element **15** slides into the axial lumen **19** formed within the lower tubular element **14** of the canopy member **11**. At this juncture, the beach umbrella **10** is firmly anchored in the ground and the canopy **18** may be opened. If the optional tiltable joint is incorporated in the canopy member **11**, the canopy **18** may also be tilted so as to maximize the area of shade cast by the canopy **18**.

When the operator is ready to depart, the canopy **18** is closed and the canopy member **11** is lifted up so as to separate it from the pole member **12**. The operator takes hold of the pole member **12** by the handle **22** and activates the switch **21** in the reverse direction, causing the auger to disengage from the ground. Using the handle **22**, the operator applies an upward pressure and guides the pole member **12** as it emerges from the ground. Once the pole member **12** has been removed from the ground and the auger **17** cleared of sand or soil, the operator may elect to either transport and store the canopy member **11** and pole member **12** separately or reassemble them so as to transport and store the beach umbrella **10** as one unit.

The present invention is, therefore, well adapted to satisfy the need for a beach umbrella which can be securely anchored in the ground without requiring significant physical strength and exertion on the part of the user. The present invention, moreover, allows a significantly larger and heavier canopy to be deployed and makes it practicable to utilize a tiltable canopy.

While the present invention has been described in some detail with reference to certain currently preferred embodiments, other embodiments are feasible and will readily suggest themselves to those skilled in the art. Therefore, the spirit and scope of the

appended claims is not limited to the description of the preferred embodiments contained herein.